

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-20 (Canceled).

21. (New) A spin-based transistor, comprising:

a silicon substrate including a carrier channel;

a ferromagnetic source contact positioned near a first end of the carrier channel;

a first silicide layer positioned between, and in contact with, the ferromagnetic source contact and the carrier channel, the first silicide layer making ohmic contact with the carrier channel such that spin-polarized carriers transmitted from the ferromagnetic source contact can be injected into the carrier channel without altering spin polarization;

a ferromagnetic drain contact positioned near a second end of the carrier channel and being capable of receiving the carriers injected into the channel, the ferromagnetic drain contact having a first spin polarization; and

a gate electrode positioned adjacent the silicon channel between the ferromagnetic source and drain contacts, the gate electrode capable of receiving a gate bias and applying a corresponding electric field across the silicon channel to control the spin polarization of carriers flowing through the channel, whereby carriers with spins aligned to said first spin polarization flow into said ferromagnetic drain contact, and carriers with spins aligned to a second spin polarization are substantially inhibited from flowing into said ferromagnetic drain contact.

22. (New) A transistor according to claim 21, further comprising:

a second silicide layer positioned between, and in contact with, the carrier channel and the ferromagnetic drain contact, such that spin polarized carriers can be transmitted from the carrier channel into the ferromagnetic drain contact without loss of spin polarization.

23. (New) A transistor according to claim 21, further comprising:
an external field generator capable of applying the gate bias to the gate electrode.
24. (New) A transistor according to claim 21, wherein:
the first silicide layer is a cobalt silicide layer.
25. (New) A transistor according to claim 21, wherein:
the first silicide layer is a nickel silicide layer.
26. (New) A transistor according to claim 21, wherein:
the ferromagnetic source contact is a cobalt ferromagnetic metal contact.
27. (New) A transistor according to claim 21, further comprising:
an oxide layer between the gate electrode and carrier channel.